Catalogue no. 11-626-X — No. 007
ISSN 1927-503X
ISBN 978-1-100-20558-8

Analytical Paper

Economic Insights

The New Investment Paradigm?

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Statistics Canada Statistique Canada

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The following symbols are used in Statistics Canada publications:

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published
*	significantly different from reference cate ory ($p < 0.05$)

The New Investment Paradigm?

John R. Baldwin, Wulong Gu, and Ryan Macdonald

This article in the *Economic Insights* series summarizes results from current Statistics Canada research on investment and capital stock accumulation. It reports on the study, *Intangible Capital and Productivity Growth in Canada.*

Compiling information on wealth accumulation has been central to Statistics Canada's activities since its inception. The wealth of the nation is a measure of its financial strength, international standing, and economic power. In 1915, Canada's first Chief Statistician, Robert H. Coats, compiled Canada's initial estimate of national wealth at the behest of the Borden Conservatives. He set the value of Canada at $16.3 billion. Since then, the practice of compiling national wealth estimates has continued, with current national balance sheet estimates placing Canada's 2011 wealth at $6.9 trillion.

Over time, the accuracy with which national wealth is estimated has improved, and the scope of assets examined has expanded. This process involved debate about which assets should be included, and how they should be measured.

At the moment, discussion has focused on how to deal with investments in areas like scientific knowledge, firm organization, and advertising, which create assets in the form of patents, trade secrets, computer codes, organizational structures, and brands. Such expenditures are referred to as intangible investment because the assets they create are not concrete physical objects such as machinery or buildings, but rather, knowledge and capabilities embedded in firms.

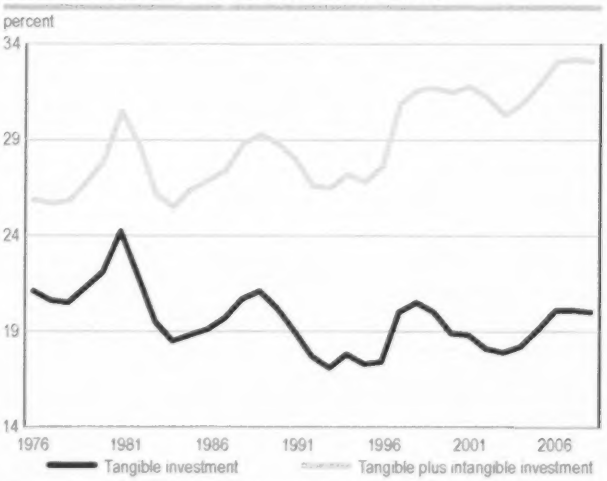
Rising importance

In the 1990s, the range of capital expenditures under consideration was widened when the computer revolution highlighted the importance of software investments. In 1997, the statistical system was revised to include investments in intangible assets tied to software and to all mineral exploration. More recently, estimates of intangible investments have tended to focus on research and development (R&D) expenditures made to find new products and processes.

But it is recognized that a comprehensive estimate of intangible investments needs to include any expenditure made by a firm which creates an asset that can be used in production for more than one year. However, moving beyond R&D, software and mineral exploration leads to difficulties in measurement.

Recently, several experimental estimates that are more inclusive have been produced for Canada that build on work taking place across a number of countries. In this work, intangibles are divided into three categories: computerized information (software and databases, which are already treated as investment); innovative property (R&D; mineral exploration, which is already treated as investment; development costs in the financial industry; architecture and engineering design); and economic competencies (advertising, employee and management training, organizational capital).

Chart 1
Share of investment in business-sector GDP



Note: Business-sector GDP not adjusted for new intangibles investment.
Source: Statistics Canada, authors' calculations.

These estimates show that intangible investments have become relatively more important through time (Chart 1). In the late 1970s, intangible investments made up around 5.2 percentage points of the share of investment in business sector GDP. Tangible investments constituted 20.9 percentage points. By the mid-2000s, intangibles share had increased to around 12.9 percentage points of the share of investment in business sector GDP, while 19.4 percentage points were accounted for by tangibles.

The inclusion of intangibles changes the trajectory of the share of total investment in business-sector GDP. The share of tangible investments fluctuates with the business cycle, declines from the mid-1970s to the early 1980s and remains stable thereafter with an average of 19.1% between 1983 and 2008. The share accounted for by intangibles, however, increases from 4.8% in 1976 to 13.1% in 2008.

Effect on the balance sheet

The growing importance of intangibles in investment also affects the composition of assets on the national balance sheet. Without intangibles, the estimate of national wealth for 2008 is $6.1 trillion, split roughly evenly among persons (33.9%), businesses and governments (36.1%), and land (30%) (Table 1). Including these experimental estimates of intangible investment increases national wealth by $0.4 trillion or 6.6%. As well, this increase is solely attributable to businesses and governments, which raises the relative share of business and government capital and reduces the relative share of national wealth held by persons or tied to land. Thus, as the importance of intangible investments increased over the 1976-to-2008 period, so did the share of national wealth in businesses.

The innovative shift

In order to assess the importance of innovation in Canada and the extensive range of expenditures that support it, the full set of intangible investments should be considered. Many firms' innovative expenditures do not consist exclusively of wages paid to traditional R&D scientists. They also focus on a range of other science and engineering costs. These expenditures in 2008 are just as large as R&D alone.

In 2008, scientific and engineering R&D made up 10.6% of intangible innovation, while architecture, design, engineering, own-account science and purchased science accounted for just as much, some 10.5%. The expenditures delineating geological deposits, another form of investments in intangible knowledge that is particularly large in the Canadian economy were 12%. The latter are often ignored in cross-country comparisons of the adequacy of innovation expenditure in Canada.

Table 1
National wealth including and excluding intangible assets, selected years, 1976 to 2008

	1976	1980	1985	1990	1995	2000	2005	2008
	$ trillions							
National wealth	0.7	1.2	1.7	2.4	2.9	3.6	4.8	6.1
National wealth including new intangibles	0.8	1.2	1.7	2.5	3.0	3.8	5.1	6.5
	percent of national wealth							
Current estimates								
Persons	**30.2**	**29.5**	**30.5**	**33.4**	**34.4**	**33.6**	**35.1**	**33.9**
Residential structures	22.3	21.3	22.4	24.8	26.3	25.4	27.3	27.3
Consumer durables	7.8	8.1	8.1	8.6	8.1	8.2	7.8	6.6
Businesses and governments	**48.6**	**47.6**	**48.6**	**44.5**	**42.0**	**42.2**	**36.6**	**36.1**
Non-residential structures	31.4	30.2	31.4	28.8	26.6	25.8	23.8	24.6
Machinery and equipment	10.4	10.0	11.0	10.3	10.2	10.9	8.5	7.6
Inventories	6.8	7.4	6.2	5.4	5.2	5.5	4.3	3.9
Land	**21.3**	**23.0**	**20.9**	**22.1**	**23.6**	**24.2**	**28.3**	**30.0**
Estimates including new intangibles								
Persons	**29.5**	**28.7**	**29.4**	**32.0**	**32.9**	**31.7**	**32.9**	**31.8**
Residential structures	21.8	20.8	21.6	23.8	25.1	24.0	25.6	25.7
Consumer durables	7.7	7.9	7.8	8.2	7.7	7.7	7.3	6.2
Businesses and governments	**49.7**	**48.9**	**50.5**	**46.7**	**44.6**	**45.5**	**40.6**	**40.0**
Non-residential structures excluding business sector intangibles	30.5	29.1	29.7	27.2	25.0	23.6	21.4	22.0
Machinery and equipment excluding business sector intangibles	10.1	9.6	10.5	9.6	9.4	9.8	7.6	6.7
Inventories	6.7	7.2	6.0	5.2	4.9	5.2	4.0	3.7
All business sector intangibles	2.5	3.0	4.3	4.7	5.2	6.9	7.6	7.5
Land	**20.8**	**22.4**	**20.1**	**21.3**	**22.6**	**22.8**	**26.5**	**28.2**

Source: Statistics Canada, authors' calculations

Table 2
Composition of intangible assets investment, 1976, 1990, 2000 and 2008

	1976	1990	2000	2008
			$ billions	
Total intangibles	**7.0**	**40.3**	**96.8**	**150.7**
Computerized information	**0.3**	**4.0**	**9.4**	**16.7**
Innovative property	**2.8**	**12.8**	**32.5**	**47.0**
Scientific and engineering R&D	0.8	5.2	12.4	16.0
Mineral exploration and evaluation	0.4	1.4	7.3	11.8
Development costs in financial industry	0.3	1.3	2.7	3.5
New architecture and engineering design	1.1	4.3	8.8	13.1
Own-account other science and engineering services	0.2	0.3	0.3	0.7
Purchased other science and engineering services	0.1	0.4	1.0	1.9
Economic competencies	**3.9**	**23.5**	**54.9**	**87.0**
Advertising	1.6	7.2	12.9	17.1
Firm-specific human capital	0.3	1.7	2.8	3.9
Purchased organizational capital	0.5	4.6	23.8	41.0
Own-account organizational capital	1.4	9.9	15.3	25.0
			percent	
Total intangibles	**100.0**	**100.0**	**100.0**	**100.0**
Computerized information	**4.3**	**9.9**	**9.7**	**11.1**
Innovative property	**40.0**	**31.8**	**33.6**	**31.2**
Scientific and engineering R&D	11.4	12.9	12.8	10.6
Mineral exploration and evaluation	5.7	3.5	7.5	7.8
Development costs in financial industry	4.3	3.2	2.8	2.3
New architecture and engineering design	15.7	10.7	9.1	8.7
Own-account other science and engineering services	2.9	0.7	0.3	0.5
Purchased other science and engineering services	1.4	1.0	1.0	1.3
Economic competencies	**55.7**	**58.3**	**56.7**	**57.7**
Advertising	22.9	17.9	13.3	11.3
Firm-specific human capital	4.3	4.2	2.9	2.6
Purchased organizational capital	7.1	11.4	24.6	27.2
Own-account organizational capital	20.0	24.6	15.8	16.6

Source: Statistics Canada, authors' calculations.

But the largest component of intangible investments occurred in areas of economic competencies, which accounted for 56% to 58% of the total intangible investment (Table 2). These consist of advertising and investments made in organizational capital including scientific managerial capabilities needed to run modern organizations. These expenditures improve firms' ability to compete or modify production processes in order to improve efficiency and contribute greatly to the knowledge that firms possess.

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